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David Aker
23 Southern Road
Hartsdale, NY 10530

EXAMINER
SHERALI, ISHRAT I

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/891,080	HURST ET AL.
	Examiner	**Art Unit**	
	Sherali Ishrat	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6, 10-16, 20 and 21* is/are rejected.

7)☒ Claim(s) *7-9 and 17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/2/2004 & 11/26/03*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 1-04)   Office Action Summary   Part of Paper No./Mail Date 07152005

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

2.   Claims 1-6, 10-16 and 20-21 are rejected under 35 U.S.C. 103(a) as being   .

unpatentable over Hommersom et al. (US 6,134,565) in view of Cohen (US

5,752,051).

Regarding claim 1, Hommersom discloses a document processing for

extracting a text block from a document (Hommersom in col. 3, lines 1-5, states FIG. 2

illustrates an apparatus for recognizing separate article in a source document.

Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying

pixels are sought in the image and are characterized as characters, line, graphic or

photo and in the second step information of the character type is divided into text block,

lines and words" and in col. 4, lines 12-15, Hommersome states "segmentation result is

filtered so that only object of the type text block, title, graphic and lines are retained".

In the system of Hommersome the step of segmentation and filtering in which object of

the type text block, title, graphics, lines retained corresponds to a document processing

for extracting a text block from a document) comprising the steps:

generating an objects including characters, marks and other symbol from the document (Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words" and in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained". In the system of Hommersome, retaining object type of text blocks, lines and graphics corresponds to generating and extracting an objects including characters [text blocks] , marks [lines] and other symbol [graphics] from the document) ;

generating a connection candidate between the objects (Hommersom in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained in the article and Hommersom in col. 5,lines states 48-55 states "initially all the objects are designated as an article [part of the article] . The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully". In the system of Hommersom segmentation result and designation of all objects as article and applying rules to combine objects corresponds to generating a connection candidate [article as whole] between the objects); and

evaluating validity of connection candidate using a language model (Hommersom in col. 4,lines 23-27, states "the actual analysis of the segmentation image take place using interpreter with number of rules based on the conventional lay-

out of the document being processed. A set of rules for different documents are stored

in the memory" and Hommersom in col. 5, lines states 48-55 states "initially all the

objects are designated as an article. The operation of the interpreter is now intended to

combine objects into groups by applying the rule successfully. In these condition all the

objects are analyzed consecutively, each object is tested in relationship with all other

objects by reference to the rule applied . If the out come of the test is positive, the

second object is added attached to it". In the system of Hommersom initially all the

objects are designated as an article and all the objects are analyzed consecutively,

each object is tested in relationship with all other objects by reference to the rule applied

If the out come of the test is positive, the second object is added attached to the first

object corresponds to evaluating validity of connection candidate using a language

model and interpreter which intended to combine objects into groups by applying the

rule corresponds to language model).

Hommersome however has not explicitly shown characters are laid out using

blank characters and generating blank characters.

In the same field of endeavor Cohen discloses characters are laid out using

blank characters and generating blank characters (Cohen in col. 3, lines 43-53, states

the sample text is filtered to remove unwanted characters. Typically punctuation and

numerals are replaced by the stop characters flanked by blanks. Formatting codes

such as carriage returns replaced by blanks" and Cohen in col. 7, lines 35-40, the

logical steps are implemented using hardware and software [computer and computer

program]. In the system of Cohen punctuation and numerals are replaced by the stop

characters and flanked by blanks and formatting codes such as carriage returns is replaced by blanks, corresponds to characters are laid out using blank characters and generating blank characters).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to lay out characters using blank characters and generating blank characters as shown by Cohen in the system of Hommersome by filtering the segmented objects (Hommersom col. 4, lines 12-15) to replace unwanted characters with the stop characters spaces flanked by blanks and replacing formatting codes such as carriage returns by blanks in the system of Hommersome because such process provide necessary step for connecting words and phrases in the document (as stated by Cohen in col. 5, lines 35-58, A word is a string of consecutive symbols which is separated from adjoining symbols by "spaces". Two adjacent words are joined together as phrase, including the common delimiter [blank space] if symbol on either side of common delimiter [blank space] jointly contribute to significantly scoring of n-gram without requiring training) thereby providing efficient/faster processing for connecting or combining objects in the document as stated by Cohen in col. 7, lines 22-30.

Regarding claim 2, Hommersom discloses determining if a connection is valid (Hommersom in col. 3, lines 1-5, states FIG. 2 illustrates an apparatus for recognizing separate article in a source document. Hommersom in col. 5,lines states 48-55 states "initially all the objects are designated as an article. The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully. In these

condition all the objects are analyzed consecutively, each object is tested in relationship

with all other objects by reference to the rule applied . If the out come of the test is

positive, the second object is added attached to it". In the system of Hommersome if the

out come of the test is positive, the second object is added attached to it, corresponds

determining if a connection is valid); and

combining the objects corresponding to source and destination of connection

candidate, if it is determined that the connection of candidate is valid (Hommersom in

col. 5,lines states 52-55 states "In these condition all the objects are analyzed

consecutively, each object is tested in relationship with all other objects by reference to

the rule applied . If the out come of the test is positive, the second object is added

attached to it", which corresponds to combining the objects corresponding to source

[first object] and destination of connection candidate [second object], if it is determined

that the connection of candidate is valid).

Regarding claim 3, Hommersom discloses the object generated is associated

with a coordinate indicating a position of the document (Hommersome in col. 4, lines 5-

10 and 16-20, states "All objects in the image are now known and their position are

fixed in the form of coordinates e.g. top left hand corner and bottom right hand corner

and step 3 comprises determining position features for all remaining obects", which

corresponds to the object generated is associated with a coordinate indicating a position

of the documen) .

Regarding claim 4, Hommersom discloses text block is generated by combinig

the objects (Hommersom, in col. 3, lines 51-60, states "clustering of adjoining

information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words". In the system of Hommersom character type is divided into text block [characters are combined as text block], lines and words [characters are combine] corresponds to text block is generated by combining the objects),

text block is defined as a rectangular region with a minimum area that includes the objects (Hommersom in figure 1 shows text block is defined as a rectangular region, in col. 4, lines 5-10, Hommersom states "all the objects position is fixed in the form of coordinates e.g. top left hand corner and the bottom right-hand corner of each object", since all all the objects position is fixed in the form of coordinates e.g. top left hand corner and the bottom right-hand corner of each object therefore it is obvious that text block is defined as a rectangular region [figure 1] with a minimum area that includes the objects because text block area is defined in term of its coordinates).

the position of f the text block is specified using the coordinates of opposing corners of rectangular region in the document (Hommersom in figure 1 shows text block is defined as a rectangular region, in col. 4, lines 5-10, Hommersom states "all the objects position is fixed in the form of coordinates e.g. top left hand corner and the bottom right-hand corner of each object" which corresponds to text block is specified using the coordinates of opposing corners of rectangular region in the document).

Regarding claim 5, Hommersom discloses connection candidate between the objects is a connection with an object that adjoins the source object on the right side or a connection with an object that is located in the next line and the left side of the source object (Hommersome in col. 6, lines 38-40, states a text block or title flanked on both sides by objects belonging to one and same article is added to the article" which corresponds to connection candidate between the objects is a connection with an object that adjoins the source object [article] on the right side).

Regarding claim 6, Hommersom shows language model (Hommersom in col. 4,lines 23-27, states "the actual analysis of the segmentation image take place using interpreter with number of rules based on the conventional lay-out of the document being processed. A set of rules for different documents are stored in the memory". This corresponds to rule based language model).

Hommersom however has not disclosed the language model is an N-gram.

In the same field of endeavor Cohen shows the language model is N-gram (Cohen in col. 3, lines 60-65, thru col. 4, lines 1-6 states "operating on the filtered sample text, step 12 forms sample N-gram counts as follows: let the filtered sample text be of length S with symbol s1, s2, sn. Fixing the positive integer n, defining the jth N-gram gj as the N-long subsequence of the text centered about jth symbol: In other words an N-long widow is slid along the text and pattern at each position of window is noted" and Hommersom in col. 5, lines 47-58, "A word is recognized as significant if at least one of its symbol has score equal to or exceeding the symbol score. Similarly if a significant N-gram span two words then the combination of two words is significant .

Any number of consecutive words be joined in this fashion. Cohen in col. 7, lines 22-26,

states "The master N-gram scores are derived from document, but are nonzero if they

are judged to be significant. As more N-grams are removed from candidacy the

processing becomes faster. In the system of Hommerson all this corresponds to a

language model is N gram because based on the N-gram score of text window, words

are recognized and the consecutive words are combined to form phrases and

sentences therefore parts of document/article are connected).

Therefore it would have been obvious to one having ordinary skill in the art at

the time the invention was made to use the N-gram language model in the system of

Hommersom by replacing rule based language model of Hommersom with N-gram

model by determining symbol scores of the segmented filtered (words, text blocks and

title) in the system of Hommersome (Hommersom col. 4, lines 11-15) because such a

process would verify the segmentation result [word, sentence , title [text blocks] of

Hommersom, connect the portion of document/article with higher processing speed (as

stated by Cohen col. 7, lines 22-26) and thereby provide faster speed of recognizing/

sorting documents/articles (as stated by Cohen in col. 2, lines 20-25).

Regarding claim 10, Hommersom discloses if there is only a single connection

candidate between the objects, the initial text blocks, or the text blocks combined

thereof, combining them without determining validity of connection using a language

model (Hommersom, in col. 3, lines 52-65, states "clusters of adjoining information

carrying pixels is sought in the image and are characterized as line, graphic, or photo.

In addition additions characters larger than the average size of the characters are

characterized further as large characters, In the second step the image information of the character type is divided into text blocks lines word. The segmentation result is expanded with objects title (a text block or line formed of large characters). In the system of Hommersom a text block or line formed [title] of large characters corresponds to the initial text blocks, combining them without determining validity of connection using a language model [combining them during segmentation without applying the rules] shown by Hommersome in col. 6, lines 26-55 based on the size of the characters corresponds to single connection candidate).

Regarding claim 11, Hommersom discloses a document processing system for extracting a text block from a document (Hommersom in col. 3, lines 1-5, states FIG. 2 illustrates an apparatus for recognizing separate articles in a source document. Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words" and in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained". In the system [FIG. 2 of Hommersom] of Hommersome the step of segmentation and filtering in which object of the type text block, title, graphics, lines retained corresponds to a document processing for extracting a text block from a document and apparatus 2 shown in Hommersom corresponds to document processing system for extracting a text block from a document) comprising the steps:

means for generating an objects including characters, marks and other symbol from the document (Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words", in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained" and Hommersom in col. 3, lines 1-10, states FIG. 2 illustrates an apparatus of the invention for recognizing separate article in a source document. This apparatus includes a central processing unit and memory disc and in col. 3, lines 20-25, "The central processing unit is computer having a program for processing". In the system of Hommersome, retaining object type of text blocks, lines and graphics corresponds to generating and extracting an objects including characters [text blocks] , marks [lines] and other symbol [graphics] from the document and the computer and computer program of Hommerson shown in FIG 2 corresponds to means for generating an objects including characters, marks and other symbol from the document) ;

mean for generating a connection candidate between the objects (Hommersom in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained in the article and Hommersom in col. 5,lines states 48-55 states "initially all the objects are designated as an article [part of the article] . The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully" and Hommersom in col. 3, lines 1-10, states FIG. 2 illustrates an apparatus of the invention

for recognizing separate article in a source document. This apparatus includes a central

processing unit and memory disc and in col. 3, lines 20-25, "The central processing unit

is computer having a program for processing". In the system of Hommersom

segmentation result and designation of all objects as article and applying rules to

combine objects corresponds to generating a connection candidate [article as whole]

between the objects and the computer and computer program corresponds to means for

generating a connection candidate between the objects); and

means for evaluating validity of connection candidate using a language model

(Hommersom in col. 4,lines 23-27, states "the actual analysis of the segmentation

image take place using interpreter with number of rules based on the conventional lay-

out of the document being processed. A set of rules for different documents are stored

in the memory" and Hommersom in col. 5, lines states 48-55 states "initially all the

objects are designated as an article. The operation of the interpreter is now intended to

combine objects into groups by applying the rule successfully. In these condition all the

objects are analyzed consecutively, each object is tested in relationship with all other

objects by reference to the rule applied . If the out come of the test is positive, the

second object is added attached to it". and Hommersom in col. 3, lines 1-10, states

FIG. 2 illustrates an apparatus of the invention for recognizing separate article in a

source document. This apparatus includes a central processing unit and memory disc

and in col. 3 lines 20-25, "The central processing unit is computer having a program for

processing". In the system of Hommersom initially all the objects are designated as an

article and all the objects are analyzed consecutively, each object is tested in

relationship with all other objects by reference to the rule applied If the out come of the

test is positive, the second object is added attached to the first object corresponds to

evaluating validity of connection candidate using a language model and interpreter

which intended to combine objects into groups by applying the rule corresponds to

language model and the computer and computer program of Hommersom of FIG 2

corresponds to means for evaluating validity of connection candidate using a language

model).

Hommersome however has not explicitly shown characters are laid out using

blank characters and means for generating blank characters.

In the same field of endeavor Cohen discloses characters are laid out using

blank characters and generating blank characters (Cohen in col. 3, lines 43-53, states

the sample text is filtered to remove unwanted characters. Typically punctuation and

numerals are replaced by the stop characters flanked by blanks. Formatting codes

such as carriage returns replaced by blanks" and Cohen in col. 7, lines 35-40, the

logical steps are implemented using hardware and software [computer and computer

program]. In the system of Cohen punctuation and numerals are replaced by the stop

characters and flanked by blanks and formatting codes such as carriage returns is

replaced by blanks, corresponds to characters are laid out using blank characters and

generating blank characters and the implementation of steps using hardware/computer

and software/computer program corresponds to means for generating blank

characters).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to lay out characters using blank characters and generating blank characters as shown by Cohen in the system of Hommersome by filtering the segmented objects (Hommersom col. 4, lines 12-15) to replace unwanted characters with the stop characters spaces flanked by blanks and replacing formatting codes such as carriage returns by blanks in the system of Hommersome because such process provide necessary step for connecting words and phrases in the document (as stated by Cohen in col. 5, lines 35-58, A word is a string of consecutive symbols which is separated from adjoining symbols by "spaces" . Two adjacent words are joined together as phrase, including the common delimiter [blank space] if symbol on either side of common delimiter [blank space] jointly contribute to significantly scoring of n-gram without requiring training) thereby providing efficient/faster processing for connecting or combining objects in the document as stated by Cohen in col. 7, lines 22-30 without requiring training and rules.

Regarding claim 12, Hommersom discloses means for combining the objects corresponding to source and destination of connection candidate, if it is determined that the connection of candidate is valid (Hommersom in col. 3, lines 1-5, states FIG. 2 illustrates an apparatus for recognizing separate article in a source document. Hommersom in col. 5,lines states 48-55 states "initially all the objects are designated as an article. The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully. In these condition all the objects are analyzed consecutively, each object is tested in relationship with all other objects by reference to

the rule applied . If the out come of the test is positive, the second object is added

attached to it". In the system of Hommersome if the out come of the test is positive, the

second object is added attached to it, corresponds determining if a connection is valid,

Hommersom in col. 5,lines states 52-55 states "In these condition all the objects are

analyzed consecutively, each object is tested in relationship with all other objects by

reference to the rule applied . If the out come of the test is positive, the second object is

added attached to it", which corresponds to combining the objects corresponding to

source [first object] and destination of connection candidate [second object], if it is

determined that the connection of candidate is valid and the system of Hommersom

which includes computer and computer program shown in figure 2 corresponds to

means for combining the objects corresponding to source and destination of connection

candidate, if it is determined that the connection of candidate is valid).

Regarding claim 13, Hommersom discloses the means for associating a

generated object with a coordinate indicating a position of the document (Hommersome

in col. 4, lines 5-10 and 16-20, states "All objects in the image are now known and their

position are fixed in the form of coordinates e.g. top left hand corner and bottom right

hand corner and step 3 comprises determining position features for all remaining

obects", which corresponds to the object generated is associated with a coordinate

indicating a position of the document and the system of Hommersom which includes

computer and computer program shown in figure 2 corresponds to means for

associating a generated object with a coordinate indicating a position of the document) .

Regarding claim 14, Hommersom discloses means for generating text block by combinig the objects (Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words" . In the system of Hommersom character type is divided into text block [character are combined as text block], lines and words corresponds to text block is generated by combining the objects and the system of Hommersom which includes computer and computer program shown in figure 2 corresponds to means for generating text block by combinig the objects),

text block is defined as a rectangular region with a minimum area that includes the objects (Hommersom in figure 1 shows text block is defined as a rectangular region, in col. 4, lines 5-10, Hommersom states "all the objects position is fixed in the form of coordinates e.g. top left hand corner and the bottom right-hand corner of each object", since all the objects position is fixed in the form of coordinates e.g. top left hand corner and the bottom right-hand corner of each object therefore it is obvious that text block is defined as a rectangular region [figure 1] with a minimum area that includes the objects because text block area is defined in term of its coordinates).

the position of f the text block is specified using the coordinates of opposing corners of rectangular region in the document (Hommersom in figure 1 shows text block is defined as a rectangular region, in col. 4, lines 5-10, Hommersom states "all the objects position is fixed in the form of coordinates e.g. top left hand corner and the

bottom right-hand corner of each object" which corresponds to text block is specified

using the coordinates of opposing corners of rectangular region in the document).

Regarding claim 15, Hommersom discloses connection candidate between the

objects is a connection with an object that adjoins the source object on the right side or

a connection with an object that is located in the next line and the left side of the source

object (Hommersome in col. 6, lines 38-40, states a text block or title flanked on both

sides by objects belonging to one and same article is added to the article" which

corresponds to connection candidate between the objects is a connection with an object

that adjoins the source object [article] on the right side).

Regarding claim 16, Hommersom shows language model (Hommersom in col.

4,lines 23-27, states "the actual analysis of the segmentation image take place using

interpreter with number of rules based on the conventional lay-out of the document

being processed. A set of rules for different documents are stored in the memory". This

corresponds to rule based language model).

Hommersom however has not disclosed the language model is an N-gram.

In the same field of endeavor Cohen shows the language model is N-gram

(Cohen in col. 3, lines 60-65, thru col. 4, lines 1-6 states "operating on the filtered

sample text, step 12 forms sample N-gram counts as follows: let the filtered sample text

be of length S with symbol s1, s2, sn. Fixing the positive integer n, defining the jth N-

gram gj as the N-long subsequence of the text centered about jth symbol: In other

words an N-long widow is slid along the text and pattern at each position of window is

noted" and Hommersom in col. 5, lines 47-58, "A word is recognized as significant if at

least one of its symbol has score equal to or exceeding the symbol score. Similarly if a

significant N-gram span two words then the combination of two words is significant .

Any number of consecutive words be joined in this fashion. Cohen in col. 7, lines 22-26,

states "The master N-gram scores are derived from document, but are nonzero if they

are judged to be significant. As more N-grams are removed from candidacy the

processing becomes faster.   In the system of Hommerson all this corresponds to a

language model is N gram because based on the N-gram score of text window, words

are recognized and the consecutive words are combined to form phrases and

sentences therefore parts of document/article are connected).

Therefore it would have been obvious to one having ordinary skill in the art at

the time the invention was made to use the N-gram language model in the system of

Hommersom by replacing rule based language model of Hommersom with N-gram

model by determining symbol scores of the segmented filtered (words, text blocks and

title) in the system of Hommersome (Hommersom col. 4, lines 11-15) because such a

process would verify the segmentation result [word, sentence , title [text blocks] of

Hommersom, connect the portion of document/article with higher processing speed (as

stated by Cohen col. 7, 22-26) and thereby provide faster speed of recognizing/ sorting

documents/articles (as stated by Cohen in col. 2, lines 20-25).

Regarding claim 20, Hommerrsom discloses if there is only a single connection

candidate between the objects, the initial text blocks, or the text blocks combined

thereof, combining them without determining validity of connection using a language

model (Hommersom, in col. 3, lines 52-65, states "clusters of adjoining information

carrying pixels is sought in the image and are characterized as line, graphic, or photo.

In addition additions characters larger than the average size of the characters are

characterized further as large characters, In the second step the image information of

the character type is divided into text blocks lines word. The segmentation result is

expanded with objects title (a text block or line formed of large characters). In the

system of Hommersom a text block or line formed [title] of large characters corresponds

to the initial text blocks, combining them without determining validity of connection

using a language model [combining them during segmentation without applying the

rules] shown by Hommersome in col. 6, lines 26-55 based on the size of the

characters corresponds to single connection candidate).

Regarding claim 21, Hommersom discloses a computer-readable medium

having recorded thereon a program for causing computer (Hommersom in col. 3, lines

1-10, states FIG. 2 illustrates an apparatus of the invention for recognizing separate

article in a source document. This apparatus includes a central processing unit and

memory disc and in col. 3, lines 20-25, "The central processing unit is computer having

a program for processing". This corresponds to computer-readable medium having

recorded thereon a program for causing computer)

extracting a text block from a document (Hommersom in col. 3, lines 1-5,

states FIG. 2 illustrates an apparatus for recognizing separate article in a source

document. Hommersom, in col. 3, lines 51-60, states "clustering of adjoining

information carrying pixels are sought in the image and are characterized as characters,

line, graphic or photo and in the second step information of the character type is

divided into text block, lines and words" and in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained". In the system of Hommersome the step of segmentation and filtering in which object of the type text block, title, graphics, lines retained corresponds to a document processing for extracting a text block from a document) comprising the steps:

generating an objects including characters, marks and other symbol from the document (Hommersom, in col. 3, lines 51-60, states "clustering of adjoining information carrying pixels are sought in the image and are characterized as characters, line, graphic or photo and in the second step information of the character type is divided into text block, lines and words" and in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained". In the system of Hommersome, retaining object type of text blocks, lines and graphics corresponds to generating and extracting an objects including characters [text blocks] , marks [lines] and other symbol [graphics] from the document) ;

generating a connection candidate between the objects (Hommersom in col. 4, lines 12-15, Hommersome states "segmentation result is filtered so that only object of the type text block, title, graphic and lines are retained in the article and Hommersom in col. 5,lines states 48-55 states "initially all the objects are designated as an article [part of the article] . The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully". In the system of Hommersom

segmentation result and designation of all objects as article and applying rules to combine objects corresponds to generating a connection candidate [article as whole] between the objects); and

evaluating validity of connection candidate using a language model (Hommersom in col. 4,lines 23-27, states "the actual analysis of the segmentation image take place using interpreter with number of rules based on the conventional lay-out of the document being processed. A set of rules for different documents are stored in the memory" and Hommersom in col. 5, lines states 48-55 states "initially all the objects are designated as an article. The operation of the interpreter is now intended to combine objects into groups by applying the rule successfully. In these condition all the objects are analyzed consecutively, each object is tested in relationship with all other objects by reference to the rule applied . If the out come of the test is positive, the second object is added attached to it". In the system of Hommersom initially all the objects are designated as an article and all the objects are analyzed consecutively, each object is tested in relationship with all other objects by reference to the rule applied If the out come of the test is positive, the second object is added attached to the first object corresponds to evaluating validity of connection candidate using a language model and interpreter which intended to combine objects into groups by applying the rule corresponds to language model).

Hommersome however has not explicitly shown characters are laid out using blank characters and generating blank characters.

In the same field of endeavor Cohen discloses characters are laid out using blank characters and generating blank (Cohen in col. 3, lines 43-53, states the sample text is filtered to remove unwanted characters. Typically punctuation and numerals are replaced by the stop characters flanked by blanks. Formatting codes such as carriage returns replaced by blanks". In the system of Cohen punctuation and numerals are replaced by the stop characters and flanked by blanks and formatting codes such as carriage returns is replaced by blanks which corresponds to characters are laid out using blank characters and generating blank characters).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to lay out characters using blank characters and generating blank characters as shown by Cohen in the system of Hommersome by filtering the segmented objects (Hommersom col. 4, lines 12-15) to replace unwanted characters with the stop characters spaces flanked by blanks and replacing formatting codes such as carriage returns by blanks in the system of Hommersome because such process provide necessary step for connecting words and phrases in the document (as stated by Cohen in col. 5, lines 35-58, A word is a string of consecutive symbols which is separated from adjoining symbols by "spaces". Two adjacent words are joined together as phrase, including the common delimiter [blank space] if symbol on either side of common delimiter [blank space] jointly contribute to significantly scoring of n-gram without requiring training) thereby providing efficient/faster processing for connecting or combining objects in the document as stated by Cohen in col. 7, lines 22-30.

Allowable Subject Matter

3.   Claims 7-9 and 17-19 are objected as being dependent rejected base claim but

would allowable over prior art of record if rewritten in independent form including

limitations of the base claim and any intervening claim.

Communication

4.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sherali Ishrat whose telephone number is 571-272-

7398. The examiner can normally be reached on 8:00 AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Ishrat Sherali

ISHRAT SHERALI
PATENT EXAMINER
ARTUNIT 2621

July 25, 2005